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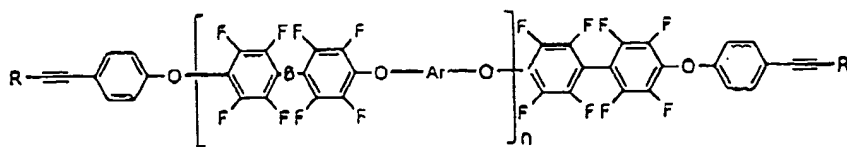
심사관 : 김홍균

(54) 열 경화성 에틸닐기를 갖는 불소 치환 폴리아릴렌 에테르, 그의제조방법 및 그를 이용한 광소자

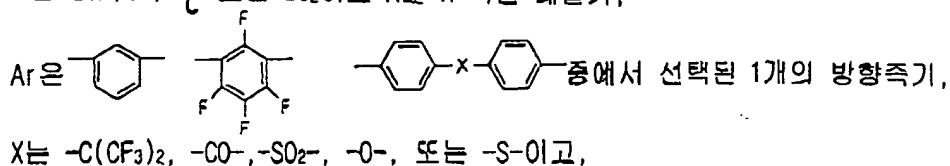
(57) 청구의 범위

청구항 1. 하기 화학식 (1)로 표시되는 에틸닐기를 갖는 불소 치환 폴리아릴렌에테르:

(화학식 1)



식 중, B는 없거나, O 또는 SO_2 이고 R은 H 혹은 페닐기,



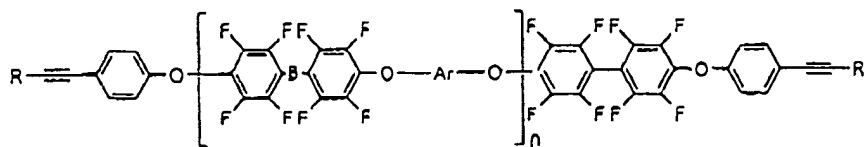
n은 중합도로서 1 ~ 100의 자연수임.

청구항 2. 제 1 항에 있어서,

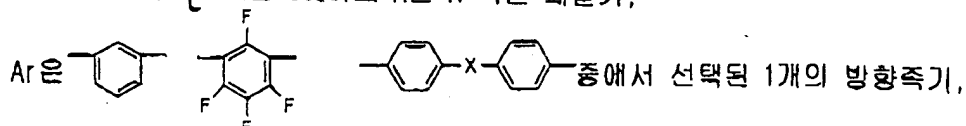
불소 치환 폴리아릴렌 에테르10-페닐에티닐 페놀(FPAE10-PEP), 불소 치환 폴리아릴렌 에테르20-페닐에티닐 페놀(FPAE20-PEP), 또는 불소 치환 폴리아릴렌 에테르40-페닐에티닐 페놀(FPAE40-PEP)인, 에티닐기를 갖는 불소 치환 폴리아릴렌에테르.

청구항 3. 데카플루오로바이페닐 화합물과 방향족 디올 유도체를 연속중합시켜 말단에 플루오로페닐기가 위치한 폴리 아릴렌 에테르를 제조하는 단계와, 상기한 폴리머에 에티닐 페놀 유도체를 고분자 말단에 치환하는 단계를 포함하는 하기 화학식 (1)로 표시되는 에티닐기를 갖는 불소 치환 폴리아릴렌에테르의 제조방법:

(화학식 1)



식 중, B는 없거나, $\begin{array}{c} O \\ || \\ C \end{array}$ 또는 SO_2 이고 R은 H 혹은 페닐기,

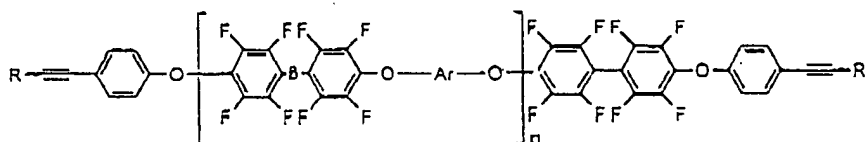


X는 $-C(CF_3)_2$, $-CO-$, $-SO_2-$, $-O-$, 또는 $-S-$ 이고,

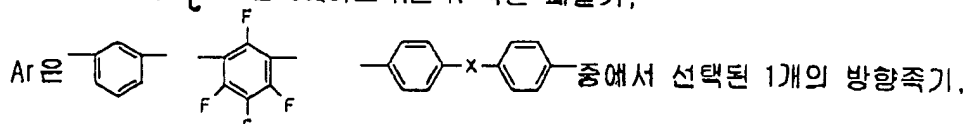
n은 중합도로서 1 ~ 100의 자연수임.

청구항 4. 데카플루오로벤조피는 화합물과 방향족 디올 유도체를 열축중합시켜 말단에 플루오로페닐기가 위치한 폴리 아릴렌 에테르를 제조하는 단계와, 상기한 폴리머에 에틸닐 페닐 유도체를 고분자 말단에 치환하는 단계를 포함하는 하기 화학식 (1)로 표시되는 에틸닐기를 갖는 불소 치환 폴리아릴렌 에테르의 제조방법:

(화학식 1)



식 중, B는 없거나, $\begin{array}{c} O \\ || \\ C \end{array}$ 또는 SO_2 이고 R은 H 혹은 페닐기,

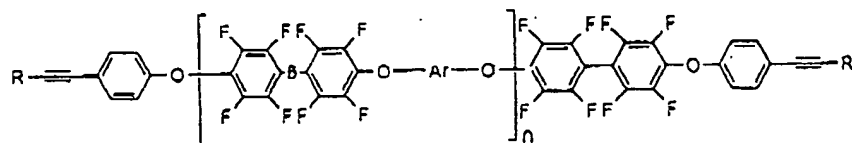


X는 $-C(CF_3)_2$, $-CO-$, $-SO_2-$, $-O-$, 또는 $-S-$ 이고,

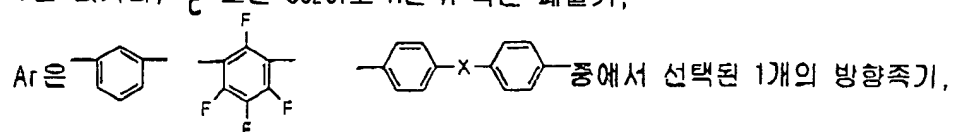
n은 중합도로서 1 ~ 100의 자연수임.

청구항 5. 실리콘 기판 상에 형성된 하부 클래딩층과, 상기한 하부 클래딩 상에 형성된 코어층과, 상기한 코어층 상에 형성된 상부 클래딩층을 포함하는 광도파로형 광소자에 있어서, 상기한 코어층이 하기 화학식 (1)로 표시되는 에틸닐기를 갖는 불소 치환 폴리아릴렌 에테르인 것이 특징인 광도파로형 광소자:

(화학식 1)



식 중, B는 없거나, S 또는 SO_2 이고 R은 H 혹은 페닐기,



X는 $-\text{C}(\text{CF}_3)_2$, $-\text{CO}-$, $-\text{SO}_2-$, $-\text{O}-$, 또는 $-\text{S}-$ 이고,

n은 중합도로서 1 ~ 100의 자연수임.

(19) THE KOREAN INDUSTRIAL PROPERTY OFFICE
(12) REGISTERED PATENT OFFICIAL GAZETTE (B1)

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(65) PUBLICATION No. P1999-0033424
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(73) PATENTEE KOREA TELECOM
PRESIDENT : LEE GE CHEOL
(72) INVENTORS

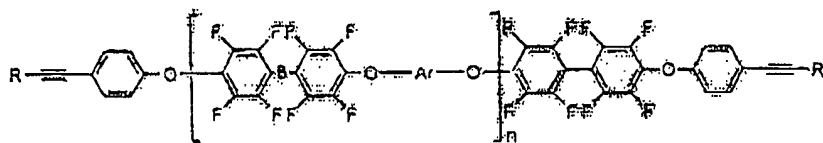
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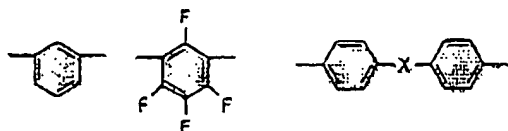
(54) FLUORINE SUBSTITUTED POLYARYLENE ETHER HAVING THEMOSSETTING
ETHINYL RADICAL, METHOD FABRICATING THE SAME AND OPTICAL DEVICE USING
THE SAME

(57) CLAIMS

1. Fluorine substituted polyarylene ether having ethinyl
radical, as represented by the following formula (1):



where B is nonexistent,  or SO₂ and R is H or phenyl radical,
Ar is one aromatic radical selected

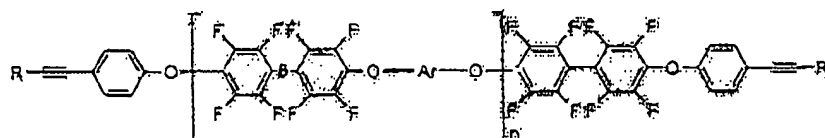


X is $-\text{C}(\text{CF}_3)_2$, $-\text{CO}-$, $-\text{SO}_2$, $-\text{O}-$ or $-\text{S}-$,

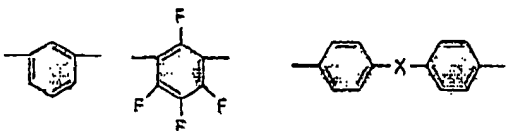
n is natural number ranging from 1~100 as polymerization degree.

2. The fluorine substituted polyarylene ether having ethynyl radical according to claim 1, wherein the fluorine substituted polyarylene ether is fluorine substituted polyarylene ether 10-phenylethynyl phenol(FPAE10), fluorine substituted polyarylene ether 20-phenylethynyl phenol(FPAE20), or fluorine substituted polyarylene ether 40-phenylethynyl phenol(FPAE40).

3. A method for fabricating fluorine substituted polyarylene ether having ethynyl radical, as represented by the following formula (1), which comprises steps of thermal polycondensing decafluorobiphenyl compound and aromatic group diol- derivatives to form polyarylene ether in which fluorophenyl radical is disposed at an end thereof, and substituting polymer for ethynyl phenol derivatives at a high molecular end.



where B is nonexistent, O or SO_2 and R is H or phenyl radical, Ar is one aromatic radical selected from

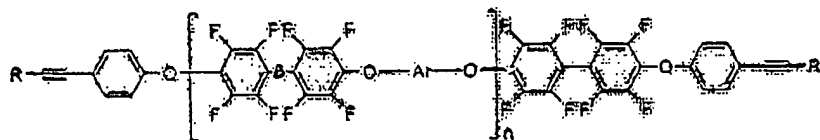


X is $-\text{C}(\text{CF}_3)_2$, $-\text{CO}-$, $-\text{SO}_2$, $-\text{O}-$ or $-\text{S}-$,

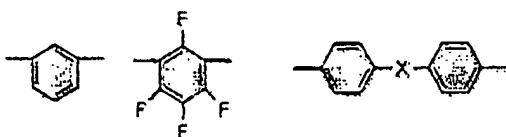
n is natural number ranging from 1~100 as polymerization degree.

4. A method for fabricating fluorine substituted polyarylene ether having ethynyl radical, as represented by the following formula (1), which comprises steps of thermal polycondensing decafluorobenzophenone compound and aromatic group diol- derivatives to form polyarylene ether in which fluorophenyl radical is disposed

at an end thereof, and substituting polymer for ethynyl phenol derivatives at a high molecular end.



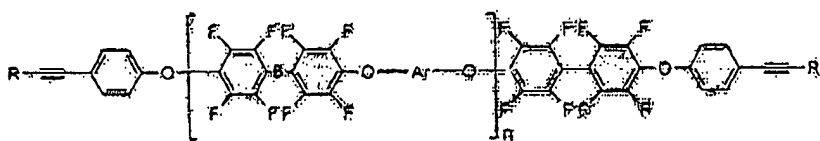
where B is nonexistent, SO_2 or SO and R is H or phenyl radical, Ar is one aromatic radical selected from



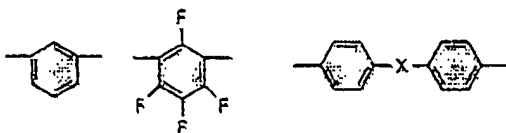
X is $-\text{C}(\text{CF}_3)_2$, $-\text{CO}-$, $-\text{SO}_2$, $-\text{O}-$ or $-\text{S}-$,

n is natural number ranging from 1~100 as polymerization degree.

5. An optical waveguide device comprising a lower cladding layer formed on a silicon substrate, a core layer formed on the lower cladding layer, and an upper cladding layer formed on the core layer, wherein the core layer is made from fluorine substituted polyarylene ether having ethynyl radical, as represented by the following formula (1):



where B is nonexistent, SO_2 or SO and R is H or phenyl radical, Ar is one aromatic radical selected from



X is $-\text{C}(\text{CF}_3)_2$, $-\text{CO}-$, $-\text{SO}_2$, $-\text{O}-$ or $-\text{S}-$,

n is natural number ranging from 1~100 as polymerization degree.